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MARKETING RESEARCH REPORT NO. 699

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APR 8 - 1965

Recent Developments in

CURRENT COTTON RECORDS

TESTING AND PRICING COTTON FOR FINENESS AND STRENGTH



ECONOMIC RESEARCH SERVICE / U.S. DEPARTMENT OF AGRICULTURE
in cooperation with
COTTON ECONOMIC RESEARCH / UNIVERSITY OF TEXAS

PREFACE

This report is based mainly on a study conducted by the Economic Research Service of the U.S. Department of Agriculture and Cotton Economic Research of the University of Texas. Cotton Economic Research is a part of the Cotton Research Committee of Texas.

The authors gratefully acknowledge the cooperation of individual shippers in providing information. Carl Cox, Director of the Cotton Research Committee of Texas, and Billy B. Crumley, Associate Director of Textile Research Laboratories, Texas Technological College, assisted in collecting the information and reviewed the report.

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Washington, D.C.

March 1965

SUMMARY AND CONCLUSIONS

For many years it has been clear that grade and staple length alone do not provide a fully satisfactory basis for selecting and processing cotton. As increased attention has been given to certain measurable properties such as fineness, strength, and length distribution, concern about the failure of prices to more adequately reflect the effect of these and other properties on the true value of American cotton has grown. This report was designed to provide information that would be useful in more effectively pricing cotton on the basis of quality elements other than grade and staple length.

The first part of the study, started early in the 1962-63 cotton season, included an interview with approximately half of the cotton shippers operating in the four major Texas markets. These interviews revealed the following important facts:

1. All of the shippers were using one or more types of information on fineness as guides in buying and selling some of their cotton. Shippers were also using data on fiber strength, but to a smaller extent than data on fineness. Practically no test data on other properties were being used.
2. Four-fifths of the respondents felt that deficiencies in the prices of U.S. cotton were adversely affecting its quality and competitive position.
3. Two-thirds to seven-eighths of the respondents favored (a) including data on fineness for individual bales in the classification information of the U.S. Department of Agriculture's Smith-Doxey program and (b) including price differentials for fineness in market quotations and in Government loan rates.
4. More than four-fifths of the respondents indicated a willingness to cooperate in developing exploratory price differentials for fineness and made suggestions useful in later efforts to develop these differentials.

Information obtained from questionnaires developed and distributed after a preliminary analysis of the information obtained in the interviews further substantiated the feasibility of establishing useful differentials for fineness. Stimulated in part by the responses to these questionnaires and by two related developments in the marketing service program, quotations committees in the three largest Texas markets began unofficially quoting price differentials for fineness in early 1963. These quotations were limited to discounts applicable to cotton with micronaire readings below 3.5 in the same groupings as those used in the questionnaires.

These developments, and the disproportionate quantities of cotton with low micronaire readings in Government stocks at outlays above market values, led to the inclusion of price adjustments for fineness in the 1963-64 export sales program. Then, in April 1964, it was officially announced that the Government loan program for the 1964 crop would include price differentials for fineness.

On August 3, 1964, each of the Nation's 15 officially designated spot markets began quoting official price differentials for fineness. Despite the subsequent discontinuance of the micronaire provisions of the current loan program, the testing and pricing of American cotton for fineness will probably become more widespread. Eventually this practice may well become as general in major domestic markets as classing and pricing for grade and staple length.

These refinements in marketing are expected to help U.S. cotton compete more effectively with manmade fibers and other products. It is highly significant, however, that the inclusion of adjustments for any one additional fiber property means a geometric increase in the number of quality combinations with which the industry must be consciously concerned. This, in turn, increases both the need for and the problems of obtaining adequate information on the most effective methods of producing, selecting, pricing, and processing American cotton.

The need for and the added difficulties of providing this information, the greater attention currently being given strength and length distribution of cotton, together with the improvements being made in manmade fibers, emphasize the importance of accelerating the research designed to provide such information. A part of this expanded research should be devoted to the blending of various qualities of cotton and to other means of reducing the number of quality designations and the number of price adjustments.

RECENT DEVELOPMENTS IN TESTING AND PRICING
COTTON FOR FINENESS AND STRENGTH

By Maurice R. Cooper and
William F. Harris 1/

NEED FOR AND PURPOSE OF STUDY

In recent years, competition between American cotton and manmade fibers, paper, plastics, and foreign-grown cotton has become increasingly severe. Of necessity, therefore, industry representatives have become greatly concerned about all aspects of the production, marketing, and utilization of domestic cotton which show promise of helping to overcome or offset the effects of this competition. As a result, industry has greatly expanded its research and made concerted efforts to help bring about important expansion in Government-financed research on cotton and cotton products.

In the expanded overall research program, greater and greater emphasis is being given to the quality of cotton. To a large extent, this is due to technological and related economic developments such as (a) changes in domestic cultural, harvesting, and ginning practices and their effects on the properties of U.S. cotton; (b) more exacting requirements of cotton spinners and weavers for fibers of specified qualities because of greater speed in processing, rapidly changing costs of labor and machinery, and increasing competition from low-cost, foreign-made textiles; (c) the rapidly increasing number of types and total volume of manmade fibers tailored to meet particular processing and use requirements; and (d) the large and growing amount of physical and economic evidence that grade and staple length alone do not provide a satisfactory basis for selecting and processing raw cotton. As more and more attention has been given to the physical and economic aspects of measurable elements of quality such as fineness, strength, length distribution, etc., concern about the failure of prices to more adequately reflect the true value of U.S. cotton has increased.

Thus, on several occasions the Cotton and Cottonseed Advisory Committee, composed of representatives of all segments of the domestic industry, gave high priority to a recommendation that the marketing research of the U.S. Department of Agriculture include studies on ways of more effectively pricing cotton on the basis of additional fiber properties. One of the justification statements accompanying this recommendation follows:

1/ Mr. Cooper is an agricultural economist in the Marketing Economics Division, Economic Research Service, U.S. Department of Agriculture; Mr. Harris is Director, Cotton Economic Research, University of Texas.

"The failure of cotton prices to reflect differences in use value for variations in all significant quality attributes seriously reduces their effectiveness as guides for adjustments in production and marketing while the failure of cotton quotations to provide full and accurate information for the whole range of cotton quality restricts their usefulness in training."

This study was undertaken in keeping with that recommendation.

SCOPE, METHOD, AND LIMITATIONS OF STUDY

Because of the nature of this study and the special interest indicated by both industry representatives and marketing research workers in Texas, it was limited mainly to the practices of shippers in the major Texas markets, and was undertaken as a Federal-State project. It is concerned chiefly with (a) the practices of Texas shippers during the 1961-62 season with regard to testing and pricing cotton for fineness and other measurable properties, (b) exploratory efforts to establish and evaluate price differentials for fineness for a few selected quality combinations and for specified periods during the 1962-63 season, and (c) subsequent important related developments.

Most of the information gathered in the first two parts of the study was obtained from personal interviews and questionnaires.

Surveys made in the late 1950's 2/, as well as spot checks made in 1962, clearly show that next to grade and staple length, the fineness of cotton fibers has thus far received the greatest amount of attention by domestic shippers and spinners. Furthermore, many of the Texas shippers interviewed for the present study thought that separate price differentials for fineness should and could be established. They indicated that this was not true for any of the other measurable properties. Thus, the emphasis in this report is on fineness of fiber, although fiber strength is also given considerable attention. 3/

During the 1962-63 cotton season, representatives of 32 shipping firms operating in each of the four central market areas of Texas--Dallas, El Paso, Houston-Galveston, and Lubbock--were interviewed. The 32 firms--7 of which were classed as large, 15 as medium, and 10 as small--represented roughly half of the shippers operating in these markets. 4/ During the 1961-62 season, the quantity of cotton handled by these firms was almost three-fifths of the total 1961 production of Texas, Oklahoma, and New Mexico. These States were estimated to have supplied almost nine-tenths of the total 1961-62 volume of the 32 firms.

2/ Cable, C. Curtis, Jr., Metcalf, Alonzo, Wilmot, Charles A., and others. Use of Cotton Fiber Tests by United States Cotton Shippers. So. Cooperative Series Bul. 62, June 1959.

3/ Fiber strength is receiving little attention because existing methods of measuring strength are slower and more expensive than those for measuring fineness.

4/ Firm classifications are based on the following annual volume in bales: large--100,000 and over; medium--50,000 - 100,000; small--under 50,000.

Twenty-three of the interviewees appraised as best qualified and most willing to assist in the exploratory phase of the project were later mailed questionnaires. Each was asked to supply average price differentials for fineness based on the sale of selected qualities of cotton from the Texas High Plains for the weeks ending December 15, 1962; April 13, 1963; and May 18, 1963. Cotton from the High Plains was designated in each of the questionnaires for three main reasons. First of all, the shippers previously interviewed indicated that variations in the fineness of cotton from this area were very important. Second, sales of cotton from this area represented an important volume of business for each of the shippers. And third, an evaluation of cotton from the High Plains only would eliminate one of the variables which could complicate the problem of determining comparable differentials for cotton of various combinations of grades and staple lengths and for different time periods.

Because the shippers disagreed on what combinations of grades and staple lengths should be included and the micronaire readings and micronaire base that should be used, provisions were made in the initial questionnaire for two reporting procedures. One provided (a) that differentials be reported for the designated or standardized quality combinations and the base micronaire readings given in the questionnaire, and (b) that differentials be based on sales with no micronaire control limit or be converted to an equivalent sales basis. The alternate procedure permitted the shipper to report the quality combinations, the base micronaire readings, and the control limits that his firm preferred. However, for purposes of greater comparability, shippers were asked to use the standard procedure if they could. Regardless of the procedure used, the differentials were supposed to represent the number of points that, together with differences for listed grades and staple lengths and quotations for Middling cotton with a staple of 1 inch, would provide a firm's best judgment of the market prices obtainable for cotton from the Texas High Plains with the several properties indicated. The first questionnaire asked the respondents to suggest changes they would like to see made in the form before they furnished differentials for later periods.

Since all shippers who completed and returned the first questionnaire used the designated quality combinations given in it, the second questionnaire contained only these standardized combinations. The second questionnaire, however, requested comments on the summary report covering the information gathered from the first, and asked the respondents to give their reactions to certain alternatives for obtaining additional price differentials for fineness. The third questionnaire requested price differentials for the same designated combinations of qualities given in the earlier ones. Because of the complicated nature of part of the information requested and other factors, some of the respondents failed to provide all of the data they were asked to give. ^{5/} Consequently, some of the interview results presented in the next two sections of this report are probably more nearly representative of the average Texas shipper than other results. It should also be noted that Texas shippers are

^{5/} Other factors include the following: (a) The failure of some firms to make greater use of data obtained from fiber tests, (b) skepticism about either the usefulness of the information being collected or about the desirability of further complicating the pricing system, and (c) insufficient familiarity of some of the persons interviewed with the practices of their firms regarding the testing and pricing of cotton.

probably giving more attention to the fineness and strength of fiber than shippers in most other parts of the Nation. The 1956-57 regional study showed this to be true. (See footnote 2.) Furthermore, under the 1963 voluntary testing program of the Department of Agriculture, a much larger percentage of the Texas crop was measured for fineness than the percentage measured in any other State.

The second phase of this study was designed mainly to gather information that would be helpful in developing procedures for future use in establishing official differentials for fineness. It was not expected that the initial results would necessarily provide differentials for fineness so sufficiently representative of a production or market area that they would be immediately acceptable. This was not expected because of the following factors: (a) The absence of generally acceptable agreements on the micronaire grouping to be quoted and the control limits or tolerances to be used in contractual specifications for fineness, (b) the question of what, if any, grade and staple length combinations and production areas should be used in establishing a set of differentials, and (c) other difficulties inherent in pricing cotton and establishing quotations on the basis of three instead of two separate quality elements.

The last part of the study was devoted to an analysis of some important actual developments and some prospective developments related to the testing and pricing of cotton. Implications of these developments are also included in the final part.

BUYING PRACTICES OF TEXAS SHIPPERS, 1961-62

In the 1962 interviews, respondents were asked about their use of test data in buying and selling cotton. Their statements verified the views repeatedly expressed by those who helped pretest the survey schedule. They felt that tests for fineness and strength were, in general, the only ones Texas and U.S. shippers were using to any significant degree. In the interest of time and expense, therefore, the data on fiber tests included in this report have been confined to those on fineness and strength. 6/

Data on Fineness and Strength Used in Purchasing Cotton

All of the cooperating shippers reported the use of one or more types of data on fineness as a guide in purchasing some or all of their cotton. Approximately 94 percent of them had their own testing equipment and personnel, and

6/ Fiber tests for other qualities are used chiefly for research purposes and not as merchandising tools, as they were at the time of the 1956-57 survey. (See footnote 2.)

thus provided some of their own data. The other 6 percent depended largely on public test reports, on the Government's Smith-Doxey classification for individual bales, 7/ and on reports of other buyers. About 9 percent of the respondents reported the use of some data from tests made by fee laboratories. Apparently they used the laboratory test data for checking or supplementing their own, since those reporting the use of laboratory data made tests with their own facilities.

The usable estimates supplied by 29 of the 32 firms interviewed indicated that some types of data on fineness were used in the purchase of approximately 97 percent of the 2-1/2 million bales of cotton purchased by these firms in 1961-62. The main source of the data on fineness was their own tests of samples obtained at random from bales grown in the areas or territories in which the cotton was purchased. Table 1 shows that data from this source were used in making about 28 percent of their total purchases. The two next most important main sources of information reported were the guarantee of sellers and data from a combination of two or more individual sources. Information from the guarantee of sellers was used in buying 19 percent of total purchases, and data from a combination of individual sources were used in making 14 percent of all purchases. Data used as the main guide in making most of the remainder of their purchases were obtained from the following sources: (a) Spot checks of sellers' actual samples, (b) public test data on cotton from the production areas in which purchases were made, and (c) test data of these individual firms on previous 1961-62 purchases from given production areas or territories.

As previously indicated, many shippers are giving much less attention to strength than to fineness of fiber in purchasing cotton, mainly because of the absence of a rapid and relatively inexpensive method of measuring strength. Only 44 percent of the shippers interviewed indicated that in 1961-62 they made any significant use of either their own test data on strength or the test data supplied by fee laboratories. This was less than half as large as the proportion that used data on fineness from these two sources.

The 20 shippers that responded indicated that they made an estimated 15 percent of their total purchases without the use of any data on the strength of cotton from the current year's crop. For another 17 percent of total purchases, the main source of prepurchase data on strength available to them was public data for the areas or gin points from which they bought. Regarding reports on the use of data on fineness, comparable estimates were 2.8 and 9.2 percent, respectively. The two most important sources of data on strength were the shippers' own tests of random samples obtained from the purchasing areas and spot checks of sellers' actual samples. Data secured from tests of random samples were used in the buying of 43 percent of total purchases, and those from spot checks of samples in the buying of 10 percent of their total purchases.

7/ Shippers using these public reports as their only source of information are ignoring the significant variations in fineness which occur in a large percentage of bales from each Texas crop. During the 1961-62 season, the only information on fineness found on the Smith-Doxey classification cards was that on a small percentage of the 1961 Texas crop which normally had a micronaire reading of 2.6 and below and was classed as "wasty."

Table 1.--Number and percentage of cotton bales purchased by the cooperating Texas shippers, by source of test data for fineness and strength, 1961-62 season

Principal source of test data <u>1/</u>	Purchased bales tested for--			
	Fineness <u>2/</u>		Strength <u>3/</u>	
	Number	Percentage : of total	Number	Percentage : of total
	1,000 bales	Percent	1,000 bales	Percent
No data for current year.....	70.0	2.8	307.0	14.7
Public test reports for buying area:	225.7	9.2	358.6	17.1
Reports of sellers on lots purchased.....	52.7	2.2	1.6	.1
Company tests of random samples from area or territory.....	683.7	27.9	908.7	43.4
Company tests of previous 1961-62 purchases.....	172.3	7.0	43.2	2.1
Company spot checks of sellers' actual samples.....	272.6	11.1	220.2	10.5
Company tests of samples from all bales in lot.....	108.4	4.4	2.8	.1
Guarantee of sellers.....	456.2	18.6	93.0	4.5
Other.....	60.0	2.4	---	---
Combination of two or more types of data.....	352.7	14.4	158.2	7.5
Total.....	2,454.3	100.0	2,093.3	100.0

1/ When data from more than one source was available, respondent was requested to give estimates for the most important one.

2/ Estimates supplied by 29 firms.

3/ Estimates supplied by 20 firms.

In 1961-62, there were three sources of public information on the fineness and strength of Texas cotton. In one, information was limited to cotton from the High Plains. Approximately three-fourths of all the cooperating Texas shippers made some use of reports of the Department of Agriculture and those of Cotton Economic Research at the University of Texas. Approximately two-fifths of the respondents reported the use of reports of the Plains Cotton Growers, Inc. Fewer shippers used the reports of this organization, probably because of its more limited geographic coverage. A number of shippers reported the use of data from each of the three sources.

Of the firms using one or more of these sources of information, five suggested that, if feasible, the data covering a particular time period should be released more promptly. Four suggested that reports be made available more frequently. A large percentage of the respondents made no suggestions for improving these reports and several specifically indicated that the existing reports were satisfactory.

Data on fineness and strength from these sources are based on random samples which cannot be identified as cotton from any individual bale or lot. This, together with the substantial bale-to-bale variation in the fineness and strength of cotton, means that information from these reports is useful only as a general buying guide rather than a means of distinguishing one bale or a group of bales from another. The same is true of the data shippers obtain from tests of cotton they already own and from their own tests of random samples obtained from particular production areas before they make a purchase. Shippers who listed either of these as a main source of data probably used the information in one or both of the following ways: (a) As a general guide or indication of how well an average lot or series of lots purchased in particular areas would meet their specifications for fineness or strength, and (b) as a means of helping determine the comparative overall or average value of cotton (of specified grades and staple lengths) in different designated production areas, assuming the fineness or strength of the cotton averages approximately the same as that indicated by the test results.

When it was indicated that data on the fineness or strength of cotton at a given location were not fully acceptable or were less desirable than data on cotton at other locations, the shipper who depended mainly on this kind of information normally either avoided purchasing at that location, made smaller purchases, or made purchases at significant price discounts. This type of information was often of limited value to both the shipper and the producer because of differences in the quality of cotton ginned at different points within an area and changes in quality which can and do occur at given locations from one week, or even one day, to the next. These differences and changes in quality, together with delays in releasing data, largely account for much of the prepurchase testing reported by Texas shippers, even in the same general areas where data were available from public reports. These factors and the lower prices paid by spinners for cotton with low micronaire readings also largely explain why producers and many of the shippers reported a desire to have the Smith-Doxey classification cards for individual bales show the micronaire reading as well as the grade and staple length.

Many Texas shippers with representatives in a great number of localities reported that in their prepurchase testing program, random samples were obtained from 100 to 300 separate locations. In most instances, these were tested for fineness only. Four shippers reported 25 to 100 samplings per location during 1961-62, while six limited their sampling per location to from 1 to 4. The average number of bales sampled per sampling at the average location varied from 5 to 100. Approximately one-fourth of the respondents indicated that the data from public releases were used in checking their own test results.

All except three to six of the respondents supplied information on the procedures generally involved in making their own tests for fineness. ^{8/} This information revealed the following facts: (a) The test samples of nearly a third of the firms reporting included a sample from only one side of the bale, (b) all of the firms requested one test determination per sample, and (c) nearly three-fifths of them had only one sample per bale tested. It also showed that the test sample of over two-thirds of the firms included cotton from two sides of the bale, and that nearly two-fifths of the firms had tests made of two samples per bale. More than a third of the last group reportedly used data based on the sample with the lower reading, while the others used an average of the two readings.

Only six or seven of the respondents reported on the procedures generally followed by their firms in testing strength. A small number reported because many firms made no strength tests, and because some of the persons interviewed were not familiar with their firms' detailed procedures for testing strength. Of the respondents who did report procedures, all except one indicated that they tested only one sample per bale and that it included cotton from only one side of the bale. All except two indicated that they make two test determinations per sample. One indicated that his firm makes only one measurement for strength per sample, while another reported that his makes three measurements per sample.

Influence of Fineness and Strength on Purchase Prices of Cotton

Of the 32 shippers who supplied information for this study, 28 (almost 88 percent) reported that their 1961-62 purchases included some price discounts for fineness. Of the remainder, two (6 percent of the total) reported that there were no price discounts for fineness in any of their purchases, and two made no report. On the other hand, 10 respondents (about 31 percent) indicated that some of their purchases included price premiums for fineness, and 20 (approximately 62 percent) indicated that their purchases included no premiums. Again two failed to report.

The proportion of shippers making adjustments for strength in their purchase prices were, on the whole, much smaller than the proportion that made price adjustments for fineness. Only 11 of the 32 firms, or 34 percent, reported the inclusion of any price premiums or discounts for strength. This number was only four-fifths as large as the number reporting the inclusion of some purchase price adjustments for fineness.

^{8/} Of those that made no report, two represented firms that had no tests for fineness made either by their own personnel or by fee laboratories.

It is significant that while the percentage (approximately 16 percent) of firms reporting price discounts for strength was less than one-fifth as large as the percentage reporting discounts for fineness, the relationship between the percentage of firms reporting price premiums for strength and those reporting premiums for fineness was entirely different. The 34 percent reporting the inclusion of premiums for strength was slightly larger than the 31 percent reporting the inclusion of some premiums for fineness. Nearly 72 percent of the firms reported no price discounts for strength and about 12 percent failed to report. For firms reporting no premiums for strength and those failing to report premiums, the percentages were 56 and 9, respectively.

Each respondent was asked to give estimates of the percentage of his firm's purchases bought at prices that included premiums and discounts for fineness and strength. But because of a combination of factors, many respondents were either unable or unwilling to provide satisfactory estimates. ^{9/} Consequently, no overall percentage estimates are included in this report. However, estimates which were given indicate that the volume of purchases involving price discounts for fineness was many times as great as the volume involving premiums for fineness. These estimates also indicate that the combined volume of purchases involving either discounts or premiums for fineness was several times as large as the total volume involving either type of differential for strength.

It should be noted that the volume involving discounts for fineness, as indicated in the last paragraph, appears somewhat too large in relation to the proportion of the crop that much of the trade is said to usually consider as "subject to discounts." From the percentage estimates which the responding firms gave and Government estimates on the distribution of the crop with regard to fineness, it is apparent that the average firm either sought out and purchased unusually large quantities of cotton with micronaire readings below 3.5 and above 5.0 or included in their estimates a considerable amount of cotton with readings which fall outside these two groups.

Obviously, one of the factors which can materially affect a firm's estimates of the proportion of his purchases involving price premiums and

^{9/} In addition to the general factors included in footnote 5, page 3, apparently the most important specific factors involved in the relatively poor response to this part of the survey include the following: (a) The difficulties in determining the extent to which the firms' buyers attempted to and actually made premium and discount adjustments in prices because of the fineness and strength of the cotton in the various lots purchased during the season, (b) the number of separate "odd" or "mixed" lots purchased during the season at an average or composite price, (c) variations in the number of bales in the individual lots and variations in the grade and staple length as well as the fineness and strength of the cotton within and between lots, (d) the extent of the guessing or judgment which is required of the firms' buyers, especially when no test data on fineness or strength are available when they examine a lot and assign it a composite quality "index" and a weighted average price, with conscious or subconscious consideration of the combinations of the different quality elements found in the individual bales in the lot, and (e) the micronaire and Pressley measurements used as a base by each of the firm's buyers.

discounts for fineness or strength is the specific property measurement or designation used as a base. By definition, any cotton with physical measurements covered by the base would not be subject to any price differentials or adjustments (either as premiums or discounts) because of the particular property of the fiber involved. Thus, the wider the base in terms of the total range of measurements for that property, the smaller the proportion of bales in a given crop that would be subject to price differentials because of variations in that property. Conversely, the narrower the base, the larger the proportion that would be subject to these price differentials. It also follows that the higher the base is in relation to the more desirable measurements of the property, the smaller the proportion of a given crop that would be subject to price premiums because of this property and the larger the proportion subject to price discounts. For similar reasons, the base can also affect the size, number, and kind of price adjustments a firm, or the industry as a whole, may make because of a particular fiber property.

In view of these indicated effects, it is highly significant that the 26 persons responding to this part of the interview were reportedly using 10 separate bases for fineness. However, because, no doubt, cotton with micronaire readings below 3.5 is ineligible for delivery on futures contracts, nearly two-thirds of the respondents gave a reading of either 3.5 or 3.5 and better as the base used by their firms. Of the remainder, one each reported using the following readings as a base: 3.0 - 3.4, 3.5 - 3.8, 3.5 - 4.0, 3.5 - 4.8, 3.5 - 5.0, 3.8 and above, and 3.8 - 4.8.

Of the 13 respondents that reported a base for strength of fiber, 9 gave 78,000 pounds per square inch (p.s.i.) and 1 each reported using 75,000, 80,000, 80,000 and better, and 85,000 - 88,000 p.s.i.

A little over half of the respondents indicated their views on whether or not purchase price differentials for fineness and strength were affected by production areas and by grade and staple length. A considerably larger proportion (approximately two-thirds) expressed their views on the influence of weather or seasons. Of those who responded to these questions, close to three-fourths felt that the differentials were affected by the grade and staple length of the cotton and the area in which it was produced. Approximately nine-tenths thought they were affected by weather and the seasons.

Twenty-three of the shippers, or approximately 72 percent of the total, supplied estimates of some of their 1961-62 purchase price differentials for fineness of cotton grown in the Texas High Plains. One reported differentials applicable to domestic cotton from any area and four gave separate differentials for cotton from the Texas High Plains and one other area. Three of the four reported the same differentials for cotton from both production areas.

Many factors influenced the nature and the amount of the estimated differentials the individual firms included in their 1961-62 purchase prices. Therefore, they varied widely. Estimated discounts for cotton from the Texas High Plains with micronaire readings of 3.0 to 3.4 inclusive, for example, ranged from 25 to 250 points (0.25 cents to 2.50 cents per pound or \$1.25 to \$12.50 per 500-pound bale).

Since each respondent was allowed complete freedom in selecting the micronaire readings for which estimates were to be made, the 23 firms reporting gave price differentials for High Plains cotton with 27 different individual readings or combinations. Eighteen reported differentials for cotton with micronaire readings from 3.0 to 3.4 and 14 reported differentials for cotton with readings of 3.5 and above. Twelve of the 14 reported the average price differential as "even" or zero (a differential containing no discount and no premium). Other micronaire combinations and average differentials reported by four or more firms are as follows: 2.5 and below, -420 points; 2.6 and below, -379 points; 2.7 - 2.9, -229 points; 2.9 and below, -188 points; 3.5 - 3.7, -15 points (including three differentials of zero); and 3.8 and above, +19. One firm each reported the following combinations and average differentials: 4.0 and above, +30 points; and 4.0 - 4.9, +100 points.

Only nine respondents supplied estimates of their 1961-62 purchase price differentials for strength, and few of the estimates given were for the same strength measurements. Of the three estimates given for cotton of approximately the same strength (80,000 - 82,000 p.s.i., 80,000 plus, and 80,000 - 85,000 p.s.i.), two included premiums of 50 points and one a premium of 25 points. The only estimates of discounts given were for cotton with a strength of 75,000 - 83,000 p.s.i. (the discounts reported as ranging from 1 to 60 points), and for that measuring 77,000 p.s.i. and less (discounts given as 25 points).

SELLING PRACTICES OF TEXAS SHIPPERS, 1961-62

Data on Fineness and Strength Used in Selling Cotton

During 1961-62, each of the 32 shippers interviewed for this part of the study employed his own equipment and personnel to obtain some of the data on fineness used in selling cotton. About 12 percent of them reportedly used some data from tests made for them by fee laboratories. Presumably these data were used to check or supplement their own test data.

Only 16 percent of the firms were using their own test data on strength; 66 percent were using data on strength from tests made by fee laboratories. Only 2 of the 32 firms used both their own test results and test data from a fee laboratory. One-fourth of the firms did not use data on strength from either of these sources.

Strength data supplied by fee laboratories are used to a much greater extent than strength data obtained from tests made by the firms themselves. This is due largely to two factors: (1) The relatively small number of sales contracts requiring strength specifications, and (2) the necessity of having strength tests made under controlled atmospheric conditions by well-trained personnel involving procedures and equipment that are costly. For most shippers, the number of bales requiring strength tests would be too small to keep the firm's facilities and personnel operating at a reasonable level of efficiency.

Because it is so important to meet the specifications of their sales contracts, some of which may be quite exacting, cooperating shippers made more tests in connection with their sales than with their purchases. A comparison

of figures on the tests will show the difference. The proportion of firms testing for fineness increased from 94 percent to 100 percent and the proportion testing for strength increased from 41 percent to 75 percent. For reasons already indicated, the increase in the number of firms testing for strength was accounted for by an increase (28 to 66 percent) in the number of firms having tests made by fee laboratories. Of the 13 shippers who used data from tests made by fee laboratories in selling but not in buying, only 1 reported making tests for strength with his own equipment and personnel.

One-fourth of the 32 cooperating firms indicated that they did not use data from either their own strength tests or those obtained from fee laboratories in selling cotton. This does not mean, however, that they all disregard strength in this part of their operation. In fact, four of them indicated that some of their sales were made on contracts which included specifications on strength. Apparently the provisions of these contracts were ones shippers were able to meet on the basis of public information, reports and guarantees of the firms or individuals from which the cotton was purchased, and on the basis of their knowledge of the strength of cotton from particular areas.

The 30 shippers reporting the micronaire readings most frequently specified by domestic and foreign spinners gave a total of 32 different micronaire combinations. 10/ Twenty-three separate specifications were reported as being most commonly included in contracts with domestic mills and 18 in contracts with foreign mills. Nine of these specifications were included in contracts with both domestic and foreign mills.

For domestic and foreign mills combined, the micronaire specifications reported by the greatest number of shippers were 3.5 and above (21 firms reporting), 3.0 and above (12 firms reporting), and 3.8 and above (11 firms reporting). Micronaire groupings reported by two to five respondents were 3.0 - 3.4, 4.0 and above, 2.6 and below, 2.5 - 3.5, less than 3.5, and 3.5 - 5.0. The 23 separate micronaire specifications, each of which was reported by only 1 respondent, ranged from 2.7 and below to 4.0 - 4.9.

Only 23 of the respondents reported the Pressley specifications most frequently included in their firms' contracts with mills. They reported a total of 18 separate specifications on strength. Nine of these were specified by domestic mills and 14 by foreign mills. Five of them were reportedly specified by both domestic and foreign customers. 11/ The specification on strength reported by the greatest number of shippers was 78,000 p.s.i. and above (16 respondents reporting). The three next most frequently reported specifications and the number of firms reporting follow: 80,000 p.s.i. and above, 8 firms; 85,000 and above, 5 firms; and 75,000 and above, 4 firms. The other 14 separate strength specifications reported were given by only 1 or 2 firms.

10/ The 4 minimum specifications for cotton with readings of 3.0, 3.5, 3.8, and 4.0 (reported separately) were considered the same as the 4 groups of 3.0 and above, 3.5 and above, 3.8 and above, and 4.0 and above. Together they were counted as 4 specifications instead of 8.

11/ The minimum specification given for any particular Pressley reading is considered the same as if it included the term "and above."

Influence of Fineness and Strength on Selling Prices of Cotton

A large proportion of the respondents who supplied information on the micronaire reading specifications most frequently included in their sales contracts or agreements with spinners also provided estimates of the average differentials for fineness included in their 1961-62 sales prices. The 26 firms giving these estimates included average differentials for 29 different specifications. Of the 21 firms reporting for cotton with a reading of 3.5 and above, all except 3 gave differentials of zero. The next most frequently listed specification was for cotton with a reading of 3.8 and above. Fifteen respondents reported price differences for this specification which averaged +18 points, including a differential of zero listed by 8 of the 15 firms. The only other specifications given by two or more respondents which involved significant premiums were those for cotton with a reading of 4.0 and above (three firms reporting) and 4.0 - 5.0 (two firms reporting), with the premiums reported averaging 16 and 19 points, respectively.

Five specifications on fineness and corresponding differentials involving discounts were given by two or more respondents. These specifications, together with the number of firms involved and the average discounts, are as follows:

<u>Specification (micronaire reading)</u>	<u>Number of firms reporting</u>	<u>Average discount (points)</u>
None	3	-300
2.6 and below	2	-187
2.9 and below	2	-275
3.0 - 3.4	5	-88
3.0 and above	12	-75

The fact that a respondent failed to provide any estimates of his firm's price differentials does not necessarily mean that the price of his cotton was not affected by fineness. In fact, three respondents reported in another part of the interview that a large percentage of their sales were made at prices which included separate price differentials for fineness. Probably the main explanation for the failure to obtain from these firms estimates of differentials for the season is that there are many difficulties involved in making such estimates. (See footnote 5, p. 3).

The 14 respondents who reported specifications on strength most frequently included in their firms' contracts with spinners also gave estimates of the average 1961-62 price differentials for strength of cotton with 18 separate specifications.

Differentials for strength involving specifications for cotton of 78,000 p.s.i. and above were reported for seven firms. The differentials ranged from even (given by five of the respondents) to +50 and +150 points. The average for the seven firms was +29 points. The next most frequently listed specification was for cotton with a strength of 80,000 p.s.i. and above, with six respondents giving estimates of differentials which averaged +54 points and ranged from even to +200 points.

Only three other specifications on strength, together with corresponding price differentials, were given by two or more respondents. These specifications and the average differentials reported are as follows:

<u>Specification (pounds per square inch)</u>	<u>Average differential (points)</u>
None	-25 (ranging from even to -50)
75,000	+33 (ranging from -25 to +100)
85,000	+164 (ranging from +100 to +200)

OTHER DEVELOPMENTS RELATING TO FINENESS AND STRENGTH OF COTTON

Some Significant Changes in the Testing and Pricing of Cotton between 1956-57 and 1961-62

About four-fifths of the shippers interviewed reported that in 1961-62 and early 1962-63 their firms made greater use of data on fineness both in buying and selling cotton than they made 5 years earlier. A little over half of them reported an increase in the use of data on strength in purchasing, and approximately three-fifths reported increased usage of this data in selling.

While comparable information on price adjustments for fineness and strength was not obtained, the indications are that during the same period the proportion of transactions involving these price adjustments increased markedly. This seems especially true with respect to adjustments for fineness. For example, the report on the 1956-57 regional survey, previously referred to, indicates that the Southwest shippers (including those in Oklahoma and all of Texas except the El Paso area) purchased little or no cotton at price discounts because the cotton was reported as either too fine or excessively fine. According to that report, many firms would not buy rather than buy at a discount. It also stated that of all U.S. firms, (all located in the south-central area) only three indicated that they paid premiums to get cotton of desirable fineness. No reference was made to purchases or sales involving price differentials for fiber strength.

Practices employed in 1956-57 contrasted sharply with those used in 1961-62. At this time, seven-eighths of the Texas shippers interviewed reported that some of their purchase prices included separate price discounts for fineness, and nearly a third reported that their purchase prices included some price premiums for fineness. Similar information on price differentials for strength shows that approximately one-sixth of these shippers reported the payment of some discounts and one-third some premiums.

Despite these rather marked changes, nearly four-fifths of those interviewed in early 1962-63 indicated they believed that the quality and competitive position of U.S. cotton was being adversely affected by the failure of market prices to more nearly reflect the true value of U.S. cotton to spinners. From two-thirds to nearly seven-eighths of them also felt that the fineness of fiber should be more adequately reflected in domestic market prices and more distinctly included in the Government's loan rates and in cotton evaluation services

available to farmers under the Smith-Doxey program. Over four-fifths of the respondents indicated a willingness to cooperate in developing an exploratory set of price differentials for fineness. A still larger proportion suggested specific micronaire readings or groups of readings for use in efforts to develop these differentials.

Differentials for Fineness and Related Information Obtained by Questionnaire

As previously indicated (pp. 2-4), three somewhat different questionnaires were mailed to 23 of the Texas shippers who were appraised, on the basis of the information obtained from the interviews, as best qualified and most willing to help obtain some differentials for cotton from the High Plains. Only one-third of them returned the first questionnaire. This was due, at least in part, to the complications involved and the relatively little separate attention the shippers had thus far given to variations in fineness as a price-determining factor.

An important immediate objective of the first questionnaire was to get information that would be helpful in establishing a uniform basis for reporting differentials. Significantly, all eight firms returning the questionnaire used the standardized portion of the form, which included 12 specified combinations of grade and staple lengths and 6 combinations of micronaire readings. This was true even though the questionnaire made provision for the individual respondent to report his firm's preference on the quality combinations to be included. Although two firms suggested that the base for reporting should be a micronaire reading of 3.5 and above instead of 3.5 - 3.9, they did not recommend a change in that part of the form. They apparently recognized that all who might agree with them about the base need only insert "none," "even," or "zero" in the columns showing micronaire groupings with readings of 4.0 - 5.0 and 5.1 and above. It is significant that three of the eight respondents reported some premiums for cotton with a micronaire reading of from 4.0 to 5.0 and one reported some premiums for cotton with readings of 5.1 and above. Five of the respondents reported no premiums or discounts for cotton with micronaire readings of 4.0 - 5.0 and 5.1 and above. One interesting aspect of the results is that no discounts were reported for cotton with micronaire readings of 5.1 and above, though shippers had previously suggested that a separate reading in this range be included because some spinners discounted cotton in this high micronaire range.

Other important considerations for a widely acceptable, uniform procedure for quoting separate price differentials for fineness are what, if any, combinations of grade and staple lengths and what production areas should be specifically provided for. If, as some shippers contended, the differentials for fineness need not vary because of a difference in the grade, staple length, or production area, the problem and cost of giving variation in fineness full and separate consideration in the marketing of cotton would be considerably less than if these factors had to be considered. It seemed noteworthy, therefore, that in the initial questionnaire five of the eight respondents listed some variations in the differentials reported for cotton falling within a particular micronaire group as the grades and staple lengths varied. Furthermore, the fact

that two of the other three respondents reported differentials applicable to some but not all of the combinations of grades and staple lengths for a given micronaire grouping suggests that they too recognize that differentials for fineness may depend, at least in part, on grade and staple length. In regard to production areas, however, all except one of the eight respondents indicated that the differentials as reported (presumably based mainly or to a considerable extent on sales of cotton from the Texas High Plains) applied, at least reasonably well, to most of their firms' sales of cotton from other areas.

Because of the limited previous experience of shippers in evaluating the effects of variations in fineness on prices, and the various complications involved, the estimated differentials reported by the individual shippers varied considerably. The amount of variation is indicated in table 2, which shows the lowest and the highest estimates given by the respondents for each of five combinations of grades and staple lengths for the week ending December 15, 1962. A comparison of these estimates reveals that for one quality combination the spread between the lowest and the highest discounts was 280 points per pound or \$14 per bale. For combinations involving premiums the largest spread was 100 points or \$5 per bale. For most of the combinations involving discounts and premiums for fineness, however, these spreads were considerably smaller, but still quite large in comparison with the averages for all reporting firms as shown in table 3.

As previously indicated, the second and third questionnaires were revised in light of the information obtained from the first one. In these, differentials were requested for the weeks ending April 13 and May 18, 1963. Ten firms completed the two forms satisfactorily and returned them. This was two more than the number completing and returning the questionnaire for mid-December 1962, and brought to 13 the number of firms returning one or more of the three forms.

Of the firms supplying usable information, nine reporting estimates for April and six reporting estimates for May included differentials for each of the 36 quality combinations involving micronaire readings below 3.5. For the other quality combinations involving readings of 4.0 and above, four firms reporting estimates for April and two reporting estimates for May left some of the 24 spaces either blank or inserted a dash. It is possible, however, that some, or possibly all, of the 10 intended for these blanks to be considered as marked even or zero. ^{12/} In any event, it seems very significant that (a) only three of the respondents supplying differentials for April and May reported premiums or discounts for fineness for those higher micronaire combinations, and (b) over 75 percent of the estimates involving these combinations were given as even or zero. These and the small average differentials reported for cottons with high micronaire readings in each of the three questionnaires give considerable support to those who contend that the micronaire base should be 3.5 and above. This in turn indicated that, for the present at least, efforts to establish dependable

^{12/} This appears especially likely in the case of two respondents who previously indicated they thought the reporting base should be a reading of 3.5 and better, since no premiums or discounts are given for cotton with the higher micronaire readings.

Table 2.--Lowest and highest sales price differentials for fineness for specified quality combinations of cotton from the Texas High Plains, as reported by 8 Texas shippers, week ending December 15, 1962

Sales price differentials for cotton with a micronaire reading of--												
Grades and staple lengths:	2.6 and below		2.7-2.9		3.0-3.4		3.5-3.9		4.0-5.0		5.1 and above	
	Low-: High-:		Low-: High-:		Low-: High-:		Low-: High-:		Low-: High-:		Low-: High-:	
	est	:	est	:	est	:	est	:	est	:	est	:
Middling White:												
7/8" and 29/32".....	-250		-425		-150		-275		-10		-150	
15/16" and 31/32".....	-300		-425		-150		-275		-10		-150	
1" and above.....	-150		-425		-100		-275		-10		-150	
Strict Low Middling White:												
7/8" and 29/32".....	-200		-425		-20		-275		-10		-150	
15/16" and 31/32".....	-200		-425		-20		-275		-10		-150	
1" and above.....	-300		-425		-20		-275		-10		-175	
Middling Light Spotted:												
7/8" and 29/32".....	-200		-425		-20		-275		-10		-150	
15/16" and 31/32".....	-200		-425		-20		-275		-10		-150	
1" and above.....	-200		-425		-20		-275		-10		-175	
Strict Low Middling Light Spotted:												
7/8" and 29/32".....	-150		-425		-20		-275		-10		-200	
15/16" and 31/32".....	-175		-425		-20		-275		-10		-200	
1" and above.....	-200		-425		-20		-300		-10		-225	

1/ Reported by 3 firms for the Middling White combinations and 2 firms for all other combinations.
2/ Reported by 1 firm only.

Table 3.--Average sales price differentials for fineness for specified quality combinations of cotton from the Texas High Plains, as reported by 8 Texas shippers, week ending December 15, 1962 1/

Grades and staple lengths	Average sales price differentials for cotton with a micronaire reading of--					
	2.6 and:	2.7-	3.0-	3.5-3.9	4.0-	5.1 and
	below	2.9	3.4	(base)	5.0	above
	Points	Points	Points	Points	Points	Points
Middling White:						
7/8" and 29/32".....	2/-350	2/-204	-77	0	3/	4/
15/16" and 31/32".....	2/-358	2/-208	-77	0	3/	4/
1" and above.....	2/-342	2/-221	-79	0	3/	4/
Strict Low Middling White:						
7/8" and 29/32".....	2/-339	-162	-73	0	3/	4/
15/16" and 31/32".....	2/-346	-165	-76	0	3/	4/
1" and above.....	2/-357	-174	-85	0	3/	4/
Middling Light Spotted:						
7/8" and 29/32".....	2/-311	-159	-70	0	3/	4/
15/16" and 31/32".....	2/-318	-162	-73	0	3/	4/
1" and below.....	2/-329	-171	-82	0	3/	4/
Strict Low Middling Light Spotted:						
7/8" and 29/32".....	2/-321	-168	-79	0	3/	4/
15/16" and 31/32".....	2/-325	-171	-82	0	3/	4/
1" and above.....	2/-328	-174	-86	0	3/	4/
Average.....	2/-335	-178	-78	0	3/	4/

1/ Each respondent presumably based his estimates on the following specific instructions: (a) Data should be based on sales with no micronaire control limits or converted to an equivalent basis, (b) when the micronaire ranges, the base, and the control limits, as indicated, differ from those a firm most frequently uses or considers more desirable, necessary conversions should be made to supply the figures on the basis requested, and (c) discounts should be recorded as minus (-) and premiums as plus (+).

2/ Averages of data supplied by either 6 or 7 firms.

3/ Only 2 or 3 firms reported premiums for fineness for these quality combinations.

4/ Only 1 firm reported differentials for these quality combinations.

and widely acceptable price differentials for fineness should be directed largely toward cotton with micronaire readings below 3.5.

For those who contend that price differentials for fineness do not or need not differ because of a variance in grade or staple length, the information reported in all of the questionnaires was not very reassuring. While the relatively narrow spreads in the average differentials given in the vertical columns in tables 4 and 5 provide significant assurance on this point, a review of the information supplied by the individual respondents did not. For example, 8 of the 10 respondents supplying differentials for April and May reported discounts for cotton with micronaire readings of 2.6 and below which changed by at least 25 points, or \$1.25 per bale, as the grade and staple length varied. Five of the firms reporting differentials for April for this low micronaire grouping showed discounts which varied by 75 to 175 points (\$3.75 to \$8.75 per bale). In May, five of the respondents reporting differentials for this same low micronaire group showed discounts which varied by 50 to 233 points (\$2.50 to \$11.65 per bale). The spread between the lowest and highest estimates given by all firms combined was, of course, much higher than that between the lowest and highest reported by individual firms.

Seven of the shippers made comments on the report covering information gathered from the first questionnaire. The following paragraphs contain the highlights of these comments.

"We are somewhat surprised that your report prepared from earlier questionnaires shows approximately the same discount for low micronaire cotton of an inch and longer staple as is shown for that of shorter staple lengths. It has been our experience that it is very difficult to sell low micronaire cotton of 1 inch and longer staple without making substantially greater discounts than we must make for cotton of shorter lengths. Except for this difference, your report is about what we had anticipated.

"Current micronaire differentials are still distorted owing to the availability of micronaire on green cards, which put all except 3.3 and above and "wasty" in the loan to a much greater extent than heretofore.

"We feel that the fineness of fiber is now as important to the spinner as grade and staple length and for this reason proper differences should be quoted. There is no doubt that the producer would have more incentive to harvest his cotton better if he knew that he would get a premium for 3.5 micronaire and better. Also there is no doubt that with proper commercial differences quoted for low micronaire this cotton would tend to move into trade channels rather than go into the loan.

"It is obvious that at least two of the reporting firms misunderstood the previous questionnaire or are not reporting correctly as shown in the section of low and high sales price differentials. No firm could sell 3.0 no control limit at 10 points under 3.5 no control limit, as there would be no buyers at this unrealistic difference.

Table 4.--Average sales price differentials for fineness for specified quality combinations of cotton from the Texas High Plains, as reported by 10 Texas shippers, week ending April 13, 1963 ^{1/}

Grades and staple lengths	Average price differentials for cotton with a micronaire reading of--					
	2.6 and below	2.7-2.9	3.0-3.4	3.5-3.9 (base)	4.0-5.0	5.1 and above
	Points	Points	Points	Points	Points	Points
Middling White:						
7/8" and 29/32".....	2/-381	2/-265	2/-101	0	3/	5/
15/16" and 31/32".....	2/-363	2/-253	2/ -90	0	3/	5/
1" and above.....	2/-363	2/-253	2/ -95	0	3/	5/
Strict Low Middling White:						
7/8" and 29/32".....	-372	-232	-98	0	3/	5/
15/16" and 31/32".....	-368	-230	-95	0	3/	5/
1" and above.....	2/-381	2/-236	2/ -95	0	3/	5/
Middling Light Spotted:						
7/8" and 29/32".....	-362	-232	-95	0	3/	5/
15/16" and 31/32".....	-358	-230	-92	0	3/	5/
1" and above.....	2/-366	2/-244	2/-103	0	3/	5/
Strict Low Middling Light Spotted:						
7/8" and 29/32".....	-380	-240	-96	0	4/	5/
15/16" and 31/32".....	-376	-238	-93	0	4/	5/
1" and above.....	2/-391	2/-254	2/-104	0	4/	5/
Average.....	-372	-242	-96	0	--	--

^{1/} See footnote 1 of table 3.

^{2/} Averages of data supplied by either 8 or 9 firms.

^{3/} Of the 5 to 7 firms reporting for these quality combinations, 1 firm gave a +25 differential for each of them; the other 4 to 6 firms reported differentials of 0.

^{4/} Each of the 6 or 7 firms reporting for these combinations gave a differential of 0.

^{5/} Of the 6 or 7 firms reporting for these combinations, 1 firm gave differentials of +25, -25, or -50; the other 5 to 6 firms reported them as even.

Table 5.--Average sales price differentials for fineness for specific quality combinations of cotton from the Texas High Plains, as reported by 10 Texas shippers, week ending May 18, 1963 1/

Grades and staple lengths	Average price differentials for cotton with a micronaire reading of--					
	2.6 and below	2.7-2.9	3.0-3.4	3.5-3.9 (base)	4.0-5.0	5.1 and above
	Points	Points	Points	Points	Points	Points
Middling White:						
7/8" and 29/32".....	2/-336	2/-221	2/ -99	0	3/	5/
15/16" and 31/32".....	2/-320	2/-208	-89	0	3/	5/
1" and above.....	2/-334	2/-216	2/ -82	0	3/	5/
Strict Low Middling White:						
7/8" and 29/32".....	2/-353	2/-219	2/-110	0	3/	5/
15/16" and 31/32".....	2/-341	2/-208	-100	0	3/	5/
1" and above.....	2/-370	2/-231	2/-102	0	3/	5/
Middling Light Spotted:						
7/8" and 29/32".....	2/-341	2/-219	2/-110	0	3/	5/
15/16" and 31/32".....	2/-330	2/-208	-100	0	3/	5/
1" and above.....	2/-349	2/-228	2/-110	0	3/	5/
Strict Low Middling Light Spotted:						
7/8" and 29/32".....	-364	-240	-121	0	4/	6/
15/16" and 31/32".....	2/-368	2/-241	2/-131	0	4/	6/
1" and above.....	2/-381	2/-248	2/-119	0	4/	6/
Average.....	-349	-224	-105	0	--	--

1/ See footnote 1 of table 3.

2/ Averages of data supplied by either 7, 8, or 9 firms. Six firms supplied data on Middling Light Spotted cotton with a staple of 1 inch and above.

3/ Of the 7 to 10 firms giving a figure for these quality combinations, 6 to 9 firms reported 0, 1 reported +25, and 1 gave figures ranging from +60 to -200.

4/ Each of the 8 or 9 firms giving a figure for those quality combinations reported 0.

5/ Of the 7 to 9 firms giving a figure for these quality combinations, 6 or 7 firms reported 0, 1 gave +25, and 1 gave -25.

6/ Of the 8 or 9 firms giving a figure for these quality combinations, 7 or 8 firms reported 0 and 1 gave -25.

Also, no firm could sell 3.0 no control limit at 150 points under 3.5 no control limit without the express purpose of shipping "wasty" cotton or 2.7 and lower, therewith paying a micronaire claim according to the difference prevailing in the various markets.

"In my opinion this report appears to be very consistent with our own findings although the discounts for fineness are slightly less than we find them to be.

"This report is very complete and informative. I think we should have these questionnaires more often. Cotton should be penalized for low mike when the cotton is classed by the Government Board just as it is penalized for short staple, leaf, or preparation. I have to pay the same regardless of mike; however, I take a loss when I resell if the mike is low.

"The breakdown of readings should be as follows: Below 2.4; 2.5 - 2.6; 2.7 - 2.9; 3.0 - 3.2; 3.3 - 3.4; 3.5 and better."

In the second questionnaire, the respondents were asked to indicate which, if any, of certain designated alternative developments relating to differentials for fineness they favored. Seven of the 10 favored asking the quotations committees to quote for fineness, 4 favored sending a questionnaire similar to the one sent to them to domestic spinners representing a cross section of domestic mills, and 3 expressed a desire to see these questionnaires sent to a larger number of domestic shippers.

None of the shippers responded to the request in the final questionnaire for comments and suggestions.

Table 6 contains the changes that took place between mid-December and mid-April and between mid-April and mid-May in the average discounts for fineness reported for each of the 36 quality combinations involving micronaire readings below 3.5. A review of these data shows that between the first two reporting periods the discounts for each of these quality combinations increased rather sharply. By far, the largest of these changes, both in points per pound and in percentage points, occurred in those combinations involving micronaire readings from 2.7 to 2.9. The smallest percentage changes occurred in those with micronaire readings of 2.6 and below. Since the Government loan program in recent years has included a discount of 400 points for cotton with a micronaire reading of 2.6 or lower, it would be reasonable to expect this micronaire grouping to be the most stable in the period when differentials for other micronaire groupings were made available for the first time.

Between mid-April and mid-May the overall changes in average discounts for fineness, on a percentage basis, were smallest for the two groups with the lower micronaire readings and largest for the group with readings from 3.0 to 3.4. On the whole, the changes between mid-April and mid-May were much smaller than those that occurred between mid-December and mid-April.

A number of factors, no doubt, contributed to these changes, and, in turn, may have had some bearing on the dependability and usefulness of these discounts.

Table 6.--Changes in average sales price discounts for fineness for specified quality combinations of cotton from the Texas High Plains, as reported by 8 - 10 Texas shippers, from mid-December to mid-April and from mid-April to mid-May 1963 1/

Grades and staple lengths	Changes in average price discounts for cotton with a micronaire reading of--					
	2.6 and below		2.7-2.9		3.0-3.4	
	Mid-Dec. : to mid-Apr.	Mid-Apr. : to mid-May	Mid-Dec. : to mid-Apr.	Mid-Apr. : to mid-May	Mid-Dec. : to mid-Apr.	Mid-Apr. : to mid-May
	Points	Points	Points	Points	Points	Points
Middling White:						
7/8" and 29/32".....	+31	-45	+61	-44	+24	-2
15/16" and 31/32".....	+5	-43	+45	-45	+13	-1
1" and above.....	+21	-29	+32	-37	+16	-13
Strict Low Middling White:						
7/8" and 29/32".....	+33	-19	+70	-13	+25	+12
15/16" and 31/32".....	+22	-27	+65	-22	+19	+5
1" and above.....	+24	-11	+62	-5	+10	+7
Middling Light Spotted:						
7/8" and 29/32".....	+51	-21	+73	-13	+25	+15
15/16" and 31/32".....	+40	-28	+68	-22	+19	+8
1" and above.....	+37	-17	+73	-16	+21	+7
Strict Low Middling Light Spotted:						
7/8" and 29/32".....	+59	-16	+72	0	+17	+25
15/16" and 31/32".....	+51	-8	+67	+3	+11	+28
1" and above.....	+63	-10	+80	-6	+18	+15
Average:						
Actual.....	+37	-23	+64	-18	+18	+9
(Percentage).....	(+11%)	(-6%)	(+36%)	(-7%)	(+23%)	(+9%)

1/ See tables 1 and 2 for the differentials used in computing these changes. The plus (+) changes indicate that the discounts for the most recent of the two periods were larger; the minus (-) changes indicate that the discounts for the most recent period were smaller.

Once all the estimates it appeared feasible to obtain from the individual shippers were in, the main, if not the only, factor which still warranted particular attention was the variation in the number and composition of shippers supplying estimates for the different quality combinations. Because of variations in the size of discounts given by the individual respondents for particular quality combinations, it was evident that some of the changes in average discounts from one period and one quality combination to another were due to changes in the number or composition of the shippers providing estimates. In view of this, a few comparisons were made to indicate the extent to which the variations in the number of respondents involved affected the changes in the averages. For this purpose, a comparison of cotton with micronaire readings from 2.7 to 2.9 was made, since these showed the greatest changes.

When the average discounts for all 12 quality combinations of cotton with micronaire readings ranging from 2.7 to 2.9, as given by the six individual shippers providing these discounts for both the mid-December and mid-April periods, were compared, the change was six points greater than the 64-point change in the average for all firms. A similar comparison of the changes that occurred between April and May shows an 11-point variation in the average of all firms reporting for this period and the average of those seven firms reporting for both periods. ^{13/} While these are significant differences, they are not considered large enough to be disturbing.

Developments Relating to Fineness Since Early 1963

Stimulated, and possibly aided, by some of the developments reviewed in this report, the cotton exchange quotations committee in each of the three largest Texas markets--Dallas, Houston, and Lubbock--started quoting unofficial differentials for fineness during the first quarter of 1963. In Lubbock these quotations were first made on February 13, almost exactly 2 months after the first questionnaire was mailed to selected shippers in each of the three markets. The first quotations for the Dallas exchange were made as of March 19, and those of the Houston exchange as of March 22. These differentials, as quoted for the three markets from February 13, 1963, to August 1964, when official differentials went into effect, are given in table 7.

From this table, it may be seen that up to July 22, 1964, the micronaire groupings used by each of these committees were exactly the same. For the most part, these differentials were applicable to all combinations of grades and staple lengths officially quoted by these exchanges. The only exceptions after March 18, when the Lubbock committee broadened its coverage, were the adjustments involving specified staple lengths in the Houston quotations for the groups with readings ranging from 2.6 and below and 2.7 - 2.9. (See footnotes 4 and 5 of table 7.) In the absence of any reference to areas of production, the differentials, as quoted by each of these committees, were presumably applicable to the bulk of cotton handled by the shippers in each of these markets, regardless of where it was grown.

^{13/} For these comparisons, information was used from only 7 of the 8 firms reporting data for both periods, since 1 firm reported estimates for less than half of the 12 quality combinations.

Table 7.--Unofficial price differentials for American upland cotton with specified micronaire readings, as quoted by the quotations committees of the Dallas, Houston, and Lubbock cotton exchanges, February 13, 1963, to July 13, 1964 1/

Market and applicable period	Micronaire readings <u>2/</u>			
	2.6 and below	2.7 - 2.9	3.0 - 3.4	3.5 & above (Base)
	<u>Points</u>	<u>Points</u>	<u>Points</u>	<u>Points</u>
Lubbock:				
Feb. 13 - Mar. 17, 1963.....	<u>3</u> /-350	<u>3</u> /-200	<u>3</u> /-100	<u>3</u> / 0
Mar. 18, 1963 - July 21, 1964...	-350	-200	-100	<u>4</u> / 0
July 22, 1964 - July 31, 1964...	-350	-250	-100	<u>4</u> / 0
				<u>4</u> /-50
Houston:				
Mar. 22, 1963 - July 13, 1964...	<u>5</u> /-350	<u>6</u> /-200	-100	0
Dallas:				
Mar. 19 - Mar. 27, 1963.....	-500	-300	-100	0
Mar. 28, 1963 - May 23, 1963...	-475	-275	-100	0
May 24, 1963 - July 31, 1964...	-425	-250	-100	0

1/ These are considered unofficial differentials and were not published as a part of the U.S. Department of Agriculture's market news quotations service, since they were not developed under the regulations applicable to the official quotations. However, they were reported regularly to the Department market news specialists as well as to members of these exchanges.

2/ Reported as applicable to all grades and staples quoted by these committees except as noted.

3/ Applicable to all tenderable grades plus Strict Low Middling, Light Spotted, and Low Middling Light Spotted.

4/ Beginning July 22, 1964, the base used in the unofficial quotations for Lubbock was 3.5 through 4.9, with 5.0 and above given as a separate group and quoted at -50. From reports of Dallas, Houston, and Lubbock cotton exchanges.

5/ No staple premiums above 15/16" allowed on cotton with a micronaire reading of 2.6 and below. For cotton above 15/16 inch, therefore, this discount is, in effect, increased by the amount of the existing official premiums for the staples involved.

6/ No staple premiums above 1 inch allowed on cotton with a micronaire reading of 2.7 - 2.9. For cotton above 1 inch, therefore, this discount is, in effect, increased by the amount of the existing official premiums for the staples involved.

For cotton with micronaire readings of 3.4 and below, the three groupings used by these committees through July 31, 1964, were identical to the groupings in the questionnaires used for this study. The quotations committees, however, used the grouping 3.5 and above as their base; whereas, in the questionnaires, cotton with these micronaire readings was divided into three groups, with a group of readings ranging from 3.5 - 3.9 as the base. Information from the questionnaires indicates that the practices and experiences of a large proportion of the respondents were in line mainly with both the broader micronaire base and a single set of differentials applicable to all official grades and staple lengths of upland cotton, without limitations or adjustments because of the area of production.

The unofficial differentials for fineness quoted by the Lubbock committee remained unchanged from the time they were first quoted until July 22, 1964. Those established by the Houston committee remained unchanged through July 31, 1964, except for changes in some of the premiums for staple length, which are disallowed when combined with discounts for fineness. (See footnotes 4 and 5, table 7.) Also, except for the disallowance for staple premiums in the discounts for Houston, the differentials of both the Lubbock and Houston committees were identical up to July 22, 1964. The importance of the adjustment feature of the Houston quotations is illustrated in that committee's quotations for February 24-28, 1964. As of that period, discounts for fineness of cotton with micronaire readings of 2.6 and below of 31/32- to 1-3/32-inch staple and of White grades were subject to additional discounts because of an adjustment ranging from 30 to 310 points per pound. The lower figure represents Good Ordinary cotton of 31/32-inch staple and the higher one cotton with grades above Middling and staple lengths of 1-3/32 inches. For the most part, however, cotton with such low micronaire readings would be combined with cotton of grades below Middling and staple lengths below 1-1/32 inches. For these combinations of grades and staple lengths, the adjustment in premiums for staple for cotton in the 2.6 and below micronaire group, as of late February 1964, ranged from 30 to 140 points. This means that for each of these quality combinations the adjusted discount for fineness was from 380 to 490 points, or 8.5 to 40 percent larger than the unadjusted discount of 350 points.

It is now evident that for many grade, staple, and micronaire combinations the adjusted discounts for fineness quoted by the Houston committee were larger than the discounts quoted by the Lubbock committee. In fact, for quality combinations whose premium for staple was 140 points, for example, the Houston committee's adjusted discount for cotton with a micronaire reading of 2.6 was 40 percent greater than the comparable quotation by the Lubbock committee. Compared with a similar quotation by the Dallas committee, the deviation as of late February 1964 would be equivalent to plus 15 percent. The Dallas committee's discounts for the 2.6 and below and the 2.7 - 2.9 micronaire groups were still larger (21 and 25 percent, respectively) than those quoted by the Lubbock committee, despite two sizable reductions made previously by the Dallas committee. These discounts, like those of the Lubbock committee, apply to all grade and staple combinations without adjustments for staple premiums. On the other hand, for the 3.0 - 3.4 micronaire group, the discount, as unofficially quoted by the Dallas committee, was exactly the same as that of the Lubbock and Houston committees.

With the increased use and importance of measurements of fineness in the marketing and pricing of American cotton, the Agricultural Marketing Service of the Department of Agriculture expanded two phases of its work in 1962-63 by providing more information on fineness. Micronaire readings for a large quantity of upland cotton purchased during the 1962-63 and 1963-64 seasons, as well as grades, staple lengths, and prices, were obtained from merchants in all major areas of the Cotton Belt. Micronaire data in a form suitable for computing price differentials for fineness were obtained from transactions covering hundreds of thousands of cotton bales during each of these seasons.

In 1962-63, the Service, as a part of its Smith-Doxey classification program, also initiated a voluntary service in the Southwest, which provided farmers with micronaire readings on about 1,250,000 bales of the 1962 crop. This service was developed in response to requests of producers, ginners, and merchants. Gins requesting that all samples submitted for grade and staple length classification also be tested for fineness were charged 8 cents per bale for the additional information. In January 1963, the Service announced that in 1963-64 this service would be available in all cotton producing areas. Approximately 3,600,000 bales of the 1963 crop were evaluated under this program, including sizable quantities from all major producing areas. In announcing the broadened program, the Service indicated that there were a number of ways in which micronaire readings could be of advantage to the cotton industry. They could be used (a) to help farmers, shippers, and others to market cotton more effectively; (b) to help the producer improve the quality of his crop by indicating and helping correct faulty practices; and (c) to enable mills to determine more accurately the spinning quality of cotton.

During the past 2 years, Department officials have publicly recognized that price differentials for fineness are important to the Government's price-support and sales programs. This recognition was made because of the increased use of fineness as a factor in marketing and the resulting disproportionate accumulation of cotton with a low micronaire reading in Government stocks at above market values. ^{14/} The first recognition was in the form of amendments to the export sales program for 1963-64. This was followed by a public notice in late December 1963 indicating that consideration was being given to requiring the use of micronaire readings in the 1964 loan program, and that interested persons might submit data, views, and recommendations with regard to the proposal. After considering these views, recommendations, and other information, Department officials announced their approval of the proposal in April 1964. However, because of later developments relating to the problems and expenses involved in carrying out this phase of the 1964 loan program without undue delay, the micronaire provisions were discontinued as of late August.

Following the April 1964 announcement, personnel of the Department and of the cotton exchanges responsible for the Nation's official cotton price quotations developed plans and procedures whereby, since August 3, 1964, micronaire

^{14/} Data available the latter part of 1962-63 showed that cottons with micronaire readings ranging from 2.7 - 3.4 represented approximately 12 percent of the 1962 U.S. crop, but accounted for 16 percent of the CCC loan entries from that crop. For cotton with readings from 2.7 - 2.9, the proportion of loan entries (over 5 percent) was almost twice as high as the proportion of that type of cotton in the total 1962 crop.

price differentials have been quoted officially in each of the 15 designated markets. Except for some of those quoted by Houston before September 4, all of these official micronaire differentials are applicable without adjustments or allowances for staple length differentials. (See footnotes 2 and 3 of table 8.) Except for cotton with micronaire readings above 3.4, these official quotations are in terms of the same micronaire groupings as the differentials previously unofficially quoted in the three Texas markets. The official quotations, however, are based on a group of readings ranging from 3.5 through 4.9, with readings of 5.0 and above as a separate group; whereas, the unofficial differentials were based on a group of readings 3.5 and above.

PROSPECTIVE DEVELOPMENTS IN THE TESTING AND PRICING OF COTTON AND THEIR IMPLICATIONS

Recent developments indicate that the testing and pricing of cotton for variations in fiber fineness will increase considerably in the immediate future. Conceivably they could eventually become as general in domestic central markets as classing and pricing for grade and staple length. How soon this occurs, if ever, may well depend to a significant extent on when and if they become an integral part of the Government's loan program.

Over the years, the use of fineness as a separate factor in designating quality and in pricing cotton is likely to be materially influenced by a number of other factors. Apparently the most important of these will be the following: (1) The extent and nature of the information available on the physical and economic effects of using cotton with various micronaire readings in the manufacture of different kinds and qualities of yarns and fabrics; (2) the number of micronaire groupings most commonly used, the specific readings included in each grouping, and whether or not these are made a part of the official standards for quality; (3) the nature and acceptability of the trading rules or practices with respect to fineness used in the purchase and sales contracts or agreements; (4) the size and nature of the price differentials associated with the individual micronaire groupings and the public availability of such differentials; and (5) related developments in testing and pricing cotton for properties such as strength and length distribution.

In considering the significance of these factors and their relationship to prospective developments in testing and pricing cotton for variation in other properties, one should bear in mind at least three important interrelated points. First, that the importance of variations in fineness, or in any other property, is in direct proportion to the effect these variations have on the usefulness of cotton in making yarns, fabrics, and other products. Second, that the nature and extent of these effects are dependent upon many things. They depend not only on the gradations of a particular property but also on the many possible combinations of these and gradations in other properties, the processing equipment used, processing speeds, equipment settings and organization, the size and structure of the yarn and other products manufactured, and the kind and amount of other fiber, if any, mixed with cotton. Third, the addition of any important quality element, such as fineness, to the properties specifically taken into account in producing, marketing, and processing cotton greatly increases both the information needed for dealing with the numerous quality combinations and the expenses and time required in obtaining such information.

Table 8.--Official price differentials for American upland cotton with specified micronaire readings, by designated spot markets, August 3, 1964, to September 16, 1964 1/

Market	Micronaire readings				
	2.6 and below	2.7-2.9	3.0-3.4	3.5-4.9 (Base)	5.0 and above
	Points	Points	Points	Points	Points
Greenville, S.C....	-350	-250	-100	0	-50
Charleston, S.C....	-350	-200	-75	0	-25
Augusta, Ga.....	-300	-200	-50	0	-25
Atlanta, Ga.....	-350	-250	-100	0	-50
Montgomery, Ala....	-300	-150	-50	0	-25
New Orleans, La....	-335	-220	-80	0	-25
Little Rock, Ark...	-300	-120	-30	0	-10
Memphis, Tenn.....	-350	-250	-100	0	-50
Greenwood, Miss....	-300	-250	-100	0	-50
Galveston, Tex....	-315	-165	-65	0	-30
Dallas, Tex.....	-400	-250	-100	0	0
Houston, Tex.....	<u>2/</u> -325	<u>3/</u> -175	-75	0	0
Lubbock, Tex.....	-350	-250	-100	0	-50
Phoenix, Ariz.....	-375	-225	-100	0	-25
Fresno, Calif.....	-400	-300	-150	0	-25
Average.....	-340	-210	-86	0	-29

1/ Quoted and published by the Agricultural Marketing Service for the first time on August 3, 1964.

2/ No staple premiums above 15/16 of an inch allowed through September 3.

3/ No staple premiums above 1 inch allowed through September 3.

It should be evident from the two preceding paragraphs that the first three factors enumerated are interdependent. For example, the cost and adequacy of the information referred to in the first one will depend in part on the number of separate measurements and measurement groupings used and whether or not they become a part of the official standards. Acceptance and use of these gradations and groupings, on the other hand, should and will be influenced by the nature and extent of the information that becomes available.

Another significant aspect of the problem of the number of micronaire groups used in buying and selling is the practical matter of dealing with so many quality combinations. With a total of 532 combinations of official grades and staple lengths, the addition of four or eight micronaire groups (the latter being the number that was to have been in the Government's loan program for the 1964 crop) increases the number of recognized quality combinations theoretically possible to 2,128 or 4,256. Furthermore, without some kind of understanding or agreement on such groupings, the total of all the quality combinations recognized and specified in buying and selling American cotton might greatly exceed 4,256. In view of this and the increased attention being given to strength and other properties, shippers and others have stressed the importance of keeping the number of micronaire groups to a minimum.

The size and nature of the price differentials for fineness are of particular concern to cotton growers in areas where an unusually large proportion of the crop has low micronaire readings. Their concern, as well as their views about the inclusion of differentials for fineness in the loan program and in the official price quotations, has been influenced by the fact that thus far the differentials as quoted have included few or no premiums.

For some years, those most concerned with ways and means of improving the competitive position of American cotton have stressed the importance of better evaluation of cotton quality and more effective preservation and utilization of all important quality elements. As a result, during the last several years there has been a marked increase in the efforts devoted to developing new and improved instruments for measuring a number of these quality properties. Some of these efforts have been concerned with what George S. Buck, Jr., a staff member of the National Cotton Council, has described as "an automated instrumentation system" or "automated cotton fiber testing line." ^{15/} He has suggested that the sequence of operations in such a system might be first the blending of samples and then testing for color, trash content and character, fineness, length, length distribution, strength, and surface properties.

He also indicated that at least reasonably satisfactory instruments for blending samples and testing color, trash content and character, and fineness were either available or very nearly so, and that the situation regarding instruments for measuring length, length distribution, and strength was not too discouraging.

^{15/} Buck, George S., Jr. Is Automated Fiber Testing Inevitable? A paper presented at the second Cotton Research Clinic-Marketing Conference held in Atlanta, Georgia, April 9-11, 1963.

In discussing possible future developments, Mr. Buck pointed out that "a host of knotty problems" will still remain even after all the necessary instruments are available. The major problems he referred to included the following: (1) The need for and the difficulties of obtaining samples that are more representative of the cotton than the conventional cut samples; (2) future high costs for tests, except those made in large quantities or where because of the uniformity of the cotton, one sample would adequately represent a number of bales; (3) the probable disadvantage of such a testing system to small and medium size firms which buy and sell raw cotton; (4) the complications involved in establishing satisfactory market values or prices under such a testing system; and (5) the manufacturer's need for and his difficulties in acquiring adequate knowledge and experience for effectively selecting and processing cotton identified by such a combination of fiber measurements.

In view of these problems, at least four of which appear to be very formidable, there seems little likelihood that such an evaluation system will replace the present system within the next few years. It could well be, however, that during this period, strength and length distribution will be used to a much greater extent. If so, the relative amount of attention given to fineness could decline, even with further absolute increases in the volume of cotton marketed on this basis. But regardless of the absolute or relative emphasis given to fineness and other individual properties, the benefits derived from testing and pricing for these properties will depend in part on the extent to which the practices of cotton producers and manufacturers are influenced by the price differences and other considerations specifically associated with these quality factors. Benefits of this kind will in turn depend to a considerable extent on (a) the size of the price differentials received by the producers and paid by manufacturers, and (b) how well producers and manufacturers understand both the physical and economic aspects of the relationship of variations in these quality elements to existing and alternative production and processing practices.

Because of a substantial increase in the information available on price differentials for fineness since this study was started, and related developments, the relationship between the price and quality of domestic cotton has no doubt improved during the past 2 years. Even so, it appears that a relatively small percentage of the sales of farmers in Texas or elsewhere include appreciable or recognizable price adjustments for fineness on individual bales or lots. ^{16/} Consequently, regardless of the size of the differentials in central markets or mill markets, farmers still appear to have comparatively little reason for changing their production practices, even when they know that some relatively inexpensive change would be expected to improve the micronaire reading of their cotton. As additional improvements are made in this phase of cotton marketing, it will be increasingly important that farmers be supplied dependable information on the effects of production and harvesting practices on the fineness of their cotton.

^{16/} Area or gin point discounts on all cotton sold after a certain date, such as date of the first killing frost, are excluded, since they are not based on evaluations of individual bales or lots.

Theoretically, at least, any market price differentials for fineness or any other property of cotton which exist over a period of time are largely determined by the effects which various gradations in this property are either known or assumed to have on manufacturers' net returns from processing cotton. Without at least some knowledge of the effects these quality variations have on processing efficiency or product quality, there is little or no real basis for price differentials for the quality element involved. Presumably it was the almost complete absence of such knowledge up to 20 or 30 years ago and the long length of time required in developing and putting into use an appreciable amount of such information which account for the fact that so few price adjustments for fineness existed up to the last few years.

For many years now an increasing amount of research and testing has been done largely on laboratory-scale equipment to determine (a) how cotton with different gradations of grade, staple length, fineness, and certain other properties affect the quality of cotton yarns, and (b) how these quality differences can be used advantageously. In the last few years, through pilot plant experiments and carefully designed mill-scale tests, a beginning has been made on studies designed to serve as better practical guides to manufacturers in terms of both the physical and the economic effects of variations in a few quality elements.

A considerable volume of public research information on prices and pricing practices as related to grade and staple length also exists. Thus far, however, such studies of variations in prices because of differences in grades and staple lengths have given practically no specific consideration to how these price variations relate to the processing costs and net returns of manufacturers. But, since these two properties have been used for many decades as the main elements of quality in physically evaluating and pricing cotton, it is reasonable to assume that many, if not most, spinners have considerable knowledge of how their operating costs and returns are affected both by grades and staple lengths and by price differentials for these properties. This knowledge helps the buyers and top management for mills decide when and to what extent changes should be made in the grades and staple lengths of the cotton they buy as changes occur in the supply and market price of cotton of various grades and staple lengths. These changes in the qualities of cotton purchased, in turn, tend to cause the market price for cotton of various grades and staple lengths to adequately reflect their overall value to spinners.

The greater the dependability and the use of information on the relationship of variations in quality and price of cotton to variations in manufacturing costs and returns, the more nearly the market prices of cotton of various grades and staple lengths will accurately reflect the real value of cotton to spinners. However, in view of the many factors involved in selecting and processing cotton which is to the manufacturer's greatest advantage, and the extent to which these factors have changed in recent years, much of the cotton purchased and used by spinners is probably bought without adequate knowledge of the grade and staple length. One illustration of this was given recently by the head of the cotton department of an important domestic firm. It seems that for some years the top officials of this company were reluctant to approve any appreciable changes in the grades of cotton used despite evidence which, his department felt, showed conclusively that the use of lower and less expensive grades would be distinctly

advantageous to the firm. Top management's concern, of course, was that the cotton department's information may have been unreliable and that less efficient processing or a poorer quality of yarn and fabric might more than offset the savings in the cost of raw cotton. This skepticism may well have been due to management's failure to realize the extent to which mechanical harvesting, lint cleaning at gins, and other recent developments have changed the relationship of grade to other elements of quality and to processing performance. Since the experiences of both spinners and research specialists in evaluating the effects of variations in the fineness of raw cotton have been much more limited, it is probable that the bases used by mill management for determining the fineness of cotton which can be used most advantageously are much less satisfactory than those for determining grade and staple length. For similar reasons, the same would appear to be true with respect to properties such as strength and length distribution, which have thus far received less attention than fineness. Consequently, expanded research to provide more information on the effects of important gradations and combinations of these properties on the usefulness of cotton to spinners should be beneficial to all segments of the cotton industry.

It would seem that more information on fineness should be especially beneficial to cotton growers in the areas producing unusually large proportions of cotton with low micronaire readings. The limited number of published reports on the blending of bales of cotton with low, medium, and high micronaire readings suggests that expansions in this area of research might materially reduce the large price discounts for cotton with the lower micronaire readings and also strengthen the demand for cotton with the higher readings. Recently, in response to some questions in this connection, Edward W. S. Calkins, a widely known and highly respected specialist in the knowledge of the relationship between the quality of cotton and spinning performance and quality of yarn, made a number of observations. Some of those especially pertinent to the need for more information on variations in fineness and their effects were essentially as follows:

"At the present time. . . (it takes) some good discounts on high and low micronaire to make it seem worthwhile to many mills to experiment with blending a wider range than they are accustomed to using, especially if it involves installing special equipment and/or the extra operation of preblending and rebaling. . . After enough mills have the equipment, become accustomed to blending, and develop confidence in their ability to do it successfully, the discounts should decrease. . . After that, there may be discounts for low micronaire, which is usually in plentiful supply, and premiums for the higher micronaire cotton that will be needed in order to take advantage of the discounts on low micronaire."

In view of the actual and potential effects of the combination of cottons with different gradations of fineness and other designated properties on producers, merchants, and manufacturers, high priority should be given to additional research designed to indicate the most effective means of blending cotton of various quality combinations. Special attention should be given also to other possibilities of reducing the number of quality designations and separate price adjustments involved. These studies should enable spinners to use cotton more advantageously, further improve the price-quality relationship of cotton, and should help strengthen the competitive position of cotton.

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